

WCRSF  
10.11.3.3

**The Spokane Tribe of Indians and  
U.S. Environmental Protection Agency (EPA) Region 10  
Formal Government-to-Government Consultation Meeting  
March 5, 2003, 10:00 a.m. - 12 noon  
Spokane Tribal Office, Wellpinit, WA**

**AGENDA**  
Upper Columbia River

**Introductions**

Spokane Tribe of Indians  
EPA

**Opening remarks**

Alfred Peone, Chairperson, Spokane Tribal Business Council  
John Iani, Regional Administrator, EPA

**Overview of EPA Region 10 Management Review Process**

Mike Gearheard, Director, Office of Environmental Cleanup, EPA

**Views & input on 2001 EPA technical findings  
and recommended next steps**

Spokane Tribe

**Site Management Options**

views/opinion on:

Formal State Deferral

NPL Listing

Other Superfund action (enforcement under Superfund

Alternative Site guidance, other enforcement, etc)

Other - (e.g. Teck Cominco American Inc. proposal for  
independent 3<sup>rd</sup> party process)

Spokane Tribe

**Comments on Ongoing Pollution from Up Stream Sources**

EPA  
Spokane Tribe

**Recommended option(s) & position on  
any potential NPL listing**

Spokane Tribe

**Q & A**

**Closing**

**Adjourn**



Invited Participants:

Spokane Tribe

Alfred Peone, Chairman, Tribal Business Council  
Gregg Abrahamson, Vice Chairman, Tribal Business Council  
Robert Brisbois, Secretary, Tribal Business Council  
Warren Seyler, Member, Tribal Business Council  
Buzz Gutierrez, Member, Tribal Business Council  
Rudy Peone, Director, Department of Natural Resources  
Margo Hill, Tribal Counsel  
Randy Connolly, Superfund Coordinator  
Shannon Work, Legal Consultant  
Fred Kirschner, Technical Consultant

EPA

L. John Iani, Regional Administrator  
Michael F. Gearheard, Director, Office of Environmental Cleanup  
Tom Eaton, Director, Washington State Operations Office  
Sandra Johnson, Director, Tribal Office  
David Croxton, Unit Manager, Site Cleanup & Brownfields  
Monica Tonel, Site Assessment Manager  
Cami Grandinetti, Remedial Project Manager  
Elizabeth McKenna, Assistant Regional Counsel

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**Background**

The findings of EPA's 2001 sampling investigation confirm the findings of previous studies documenting the presence of hazardous substance contamination at the Upper Columbia River. The data suggests that further detailed investigation of contamination at the Upper Columbia River is warranted.

The EPA Region 10 Management Review Team will convene in April of 2003 to evaluate the site with the goal of reaching a consensus recommendation on next steps.

Information to be considered by the Region 10 Management Review Team in its evaluation of the site includes technical findings, input received from the state, tribe, community, interested parties, and other facts.

**Purpose of EPA and Spokane Tribe government-to-government consultation meeting**

The purpose of the EPA and Spokane Tribe of Indians government-to-government consultation meeting is to hear STI's views about the site and to solicit its opinion on possible site management options.

The input provided by the Spokane Tribe of Indians will be shared with the Management Review Team members during its meeting planned for April 2003.

# Upper Columbia River Technical Findings

## REGION 10





# Outline

## Results

- Trends
- Human Health
- Ecological Health

## Next Steps

# Introduction

- Study area: U.S. Canadian Border to Inchelium
- Collect data to determine potential for NPL listing
- Interpret results
  - Identify patterns
  - Compare with available human and ecological benchmarks

# Don't know

## Representative of human exposures

Sample locations	- where
Site uses	- what activities
Sample types	- which media and analytes
	- fish tissue residues
	PCBs & Dioxins

Assumptions determine who and what is assessed and protected

Fate and transport processes (also for Eco)

## Human Health Benchmarks

Use Assumptions Determine Risk-Based Screening Levels

Risk increases with exposure & use:

Rank order:

- 1) Tribal subsistence
- 2) Residential
- 3) Recreational

## Three Types of Health Risk:

- Arsenic - Increased probability of cancer  
= Exposure x Cancer Potency Factor
- Lead - Predictive Blood Lead Model (EPA-IEUBK)  
Goal: < 5% probability of PbB > 10 µg/dl
- Other - Compare exposure to threshold  
Hazard Quotient = Exposure / Reference dose

## Human Health Summary

~10% exceedances of recreational benchmarks for lead (5/49) and arsenic (4/49)

- Highest levels were 2x recreational values (Coeur d'Alene & Spokane Rivers)
- Other metals were mostly below residential benchmarks  
few above 2x residential benchmark

## Eco Risk – Methods: Lines of Evidence

- Sediment Chemistry
  - *Compare to benchmarks*
- Sediment Toxicity
  - *Available toxicity test results*
- Effects on Biotic Communities
  - *Benthic organisms*
  - *Fish*
- Bioaccumulation into Tissues

## Eco Risk – Summary: Lines of Evidence

- Sediment Chemistry: *repeated, consistent exceedance of benchmarks*
- Sediment Toxicity: *repeatedly noted at sites near border*
- Effects on Biotic Communities
  - *Benthic organisms – effects seen*
  - *Fish – needs study*
- Bioaccumulation: *4 – 60x metals*

## Eco Freshwater Sediment Chemistry Benchmarks

- Background/upstream
- Cominco Trail Aquatic ERA
- Other Benchmarks
  - CDA - RI
  - WA State

Sed Chem

## Background/Upstream

	CANTOX Upstr-Ave	CANTOX Upstr-Max	WDOE Arrow Lake	EPA-SI Background	USGS Background
As	1.07	1.24	2	2	6.5
Cd	0.157	0.198	0.46	0.47	0.2
Cr	12.7	29.2		12	84
Cu	11.6	15.9	3.6	3.5	20
Pb	8.39	8.83	11.5	11	24
Hg	0.035	0.05	0.0004	0.0004	0.028
Ni	7.18	9.23		13.4	34
Se	0.75	1		5	0.2
Ag	0.0952	0.144		0.5	0.5
Tl	0.0448	0.05		5	
V	21	50.6		5.93	84
Zn	49.2	83.4	26.9	26.9	74

CANTOX 1995-1999; WDOE 2001; SI

Sed Chem

## Cominco ERA Problem Formulation

	Low	High	Screening Concentration (mg/kg dw)
As	5.7	17	5.7
Cd	0.6	3.5	0.6
Cr	36.4	90	36.4
Cu	35.1	200	35.1
Pb	33.4	91.3	33.4
Hg	0.16	0.49	0.16
Ni	16	75	16
Se	5	5	5
Ag	0.5	2.2	0.5
Zn	120	320	120

CANTOX Sediment Quality RANGE (2002 draft - Vol II - Table 6-14; p 6-60)

Sed Chem

## From CDA (Table E-6)

Analytes Evaluated	Preliminary Remedial Goal (mg/kg dw)		
	CSM Units 1 and 2	CSM Units 3 and 4	CSM Unit 5
Arsenic	22	13	9.3
Cadmium	2.7	0.68	0.7
Copper	53	28 <sup>a</sup>	28 <sup>a</sup>
Lead	171	47	35 <sup>a</sup>
Mercury	0.3	0.17 <sup>a</sup>	0.17 <sup>a</sup>
Silver	1.1	0.73 <sup>a</sup>	0.73 <sup>a</sup>
Zinc	280	98 <sup>a</sup>	98 <sup>a</sup>

<sup>a</sup> PRGs based on toxicity reference values; other PRGs default to background concentrations for those portions of the Basin

Sed Chem

## Eco 1: Freshwater Sediment Chemistry

Three patterns & hypothetical explanations  
(consistent with numerous studies from mid 1980's to present)

- High at border, decreasing to S (*e.g.*, Zn, Cu, As)
  - Consistent with slag as a source
  - Canadian studies:
    - 40x increase in metals downstream from Trail
    - Beaver Creek station characterized as primarily slag
  - USGS (1992): Cu & Zn 20x benchmarks
  - USGS (2002): Cu & Pb in 64 um fraction – low conc.; same pattern
  - Ecology (2001): Cu & Zn 550x & 600x Arrow Lake
- Peaks in the middle (*e.g.*, Hg)
  - Consistent with mining as a source; USGS – Hg, Cd, Pb
- No pattern (*e.g.*, V)
  - Consistent with background as a source or multiple sources

Sed Chem

## Eco 2: Freshwater Sediment Toxicity

- Canadian Studies
  - CRIEMP (1994) - Single tests showed 33% and 27% amphipod survival immediately downstream of both Celgar and Cominco
  - Env Can (1992) – slag 0% survival with high Cu & Zn in overlying water; downstream - 0% survival
  - DFO (1992) – slag toxicity to 5 different organisms
- USGS (1992)
  - Northport reach – adverse effects to 3 different organisms
- WA State – Ecology (2001)
  - Highest toxicity (0-50% survival) = highest metals

## Eco 3a: Benthic Invertebrate Communities

- Canadian Studies - CRIEMP (1994)
  - Community differences downstream associated with Cu, Pb, Sb, Sr, Zn
- USGS (1992)
  - Riffles – disturbed community (3-14 taxa v. 30+)
  - Depositional areas – difficult to assess; naturally low
- Cominco Trail Aquatic ERA (2003)
  - Species richness and density slightly lower: "a predictable, graded response to heavy metal concentrations."
  - Data from 1999 & 2001

## Eco 3b: Fish

- Cominco Trail Aquatic Problem Formulation (2003)
  - Fish Tissue: Potential for Cd & Cu to affect fish (4x & 9x tissue benchmarks)
  - Fish Health: poor datasets (small sample size, high variability, different programs, etc.)



## Eco 4: Bioaccumulation

- Canadian Studies
  - CRIEMP (1994) – significant changes to effluent discharges have occurred since this study
    - Indication of 4 to 60x greater tissue concentrations of metals (Zn, Cu, Pb, Sb) in caddis fly and mussels at Waneta
- US Studies
  - USGS (1992) – reviews a long history of fish contamination
    - Walleye – Hg – Canadian consumption advisory
    - Large-scale Sucker – Pb, Zn, Cu
    - Lake & mountain whitefish – dioxin/furan – Canadian consumption advisory
- Cominco Trail Aquatic Problem Formulation (2003)
  - Fish tissue accumulation of metals above benchmarks (5 species)
  - Nov 2001 study of 4 species downstream

## Next Eco-Risk Steps by Cominco

Draft Aquatic Problem Formulation Report 2002

Section 5.4 – Summary

“Further site-specific data to reduce uncertainty and add strength to the weight of evidence is needed.”

## Draft Aquatic Problem Formulation Section 5.3 – Data Gaps

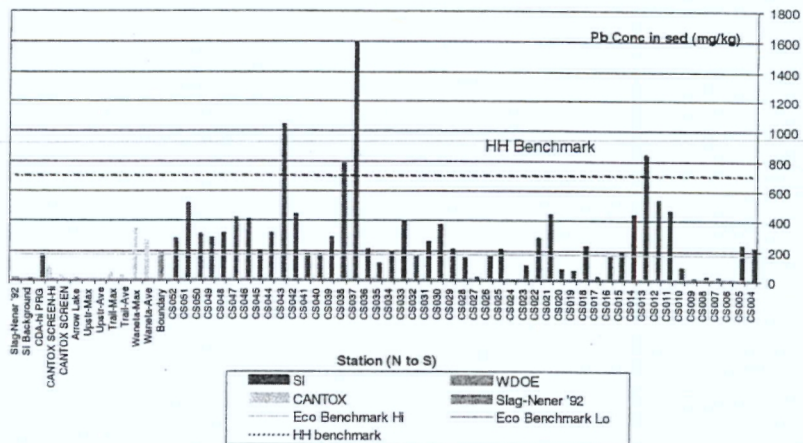


Arsenic in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons  
As slag is a detection limit (<100 mg/kg dw)

# Lead

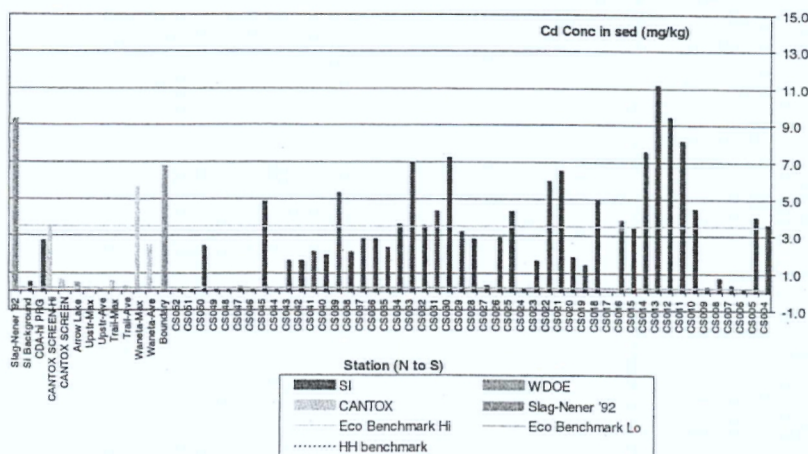
Highest eco comparison value = 171 mg/kg)

Lead in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons  
Slag concentrations (ave=20 mg/kg dw, n=3; Nener 1992) seem low



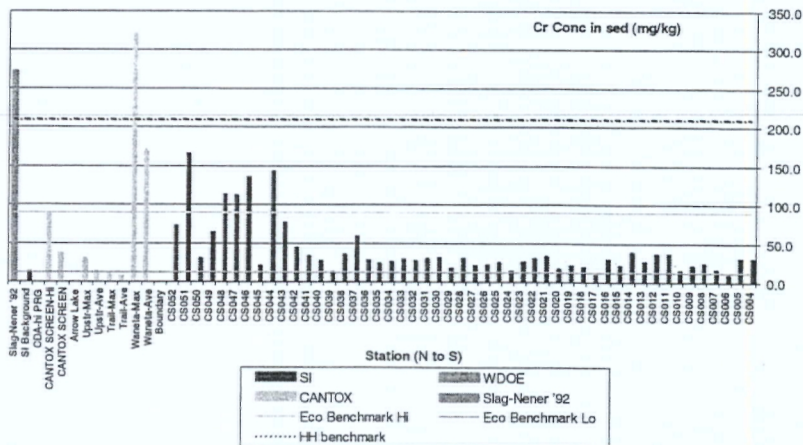
# Cadmium

Cadmium in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons  
One high SI data point omitted (143 mg/kg at CS017)



# Chromium

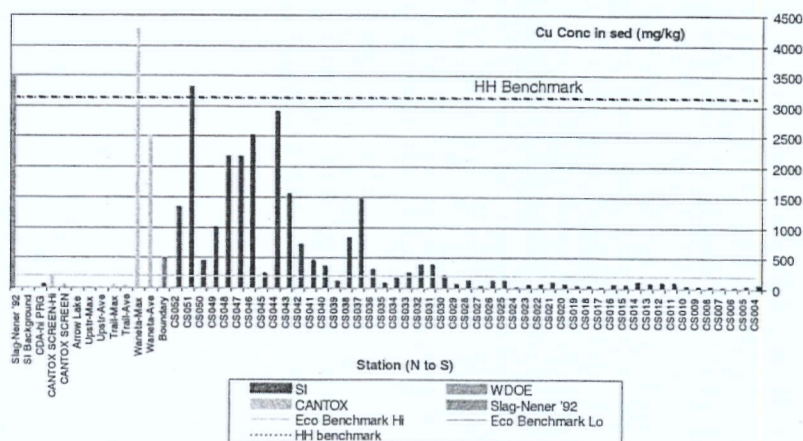
Chromium in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons



# Copper

Highest eco comparison value = 200 mg/kg (upstream peaks)

Copper in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons

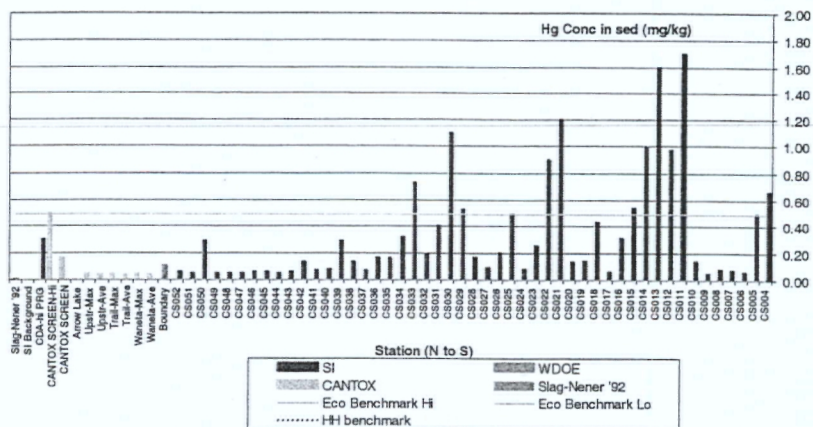




# Mercury

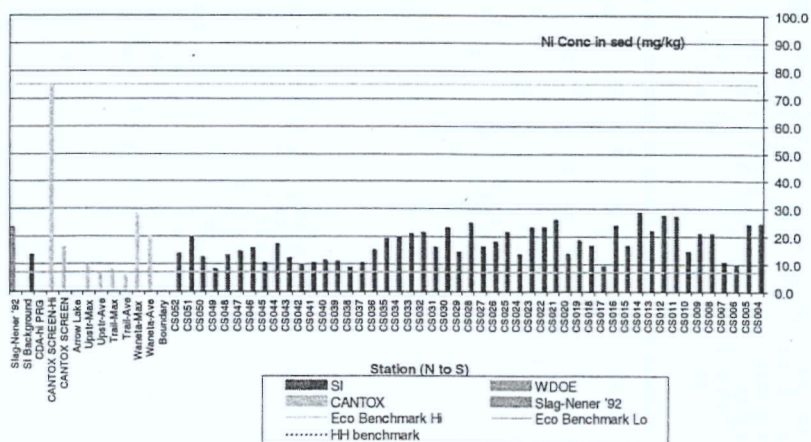
Highest eco comparison value = 0.49 mg/kg (downstream peaks)

Mercury in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons  
Slag below detection (<0.005 mg/kg dw)



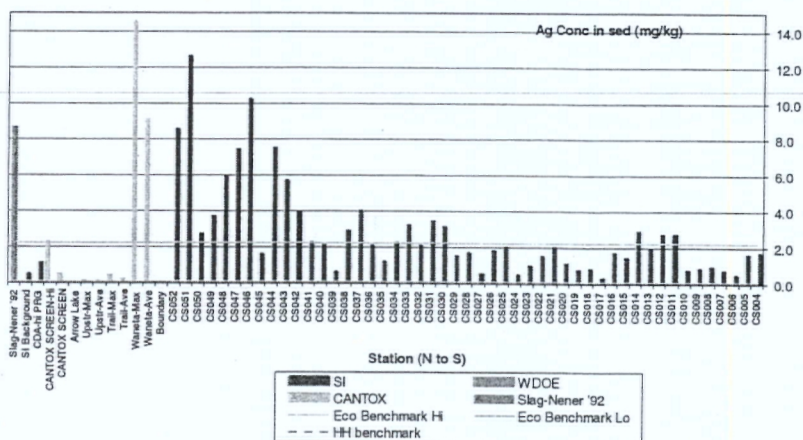
# Nickel

Nickel in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons



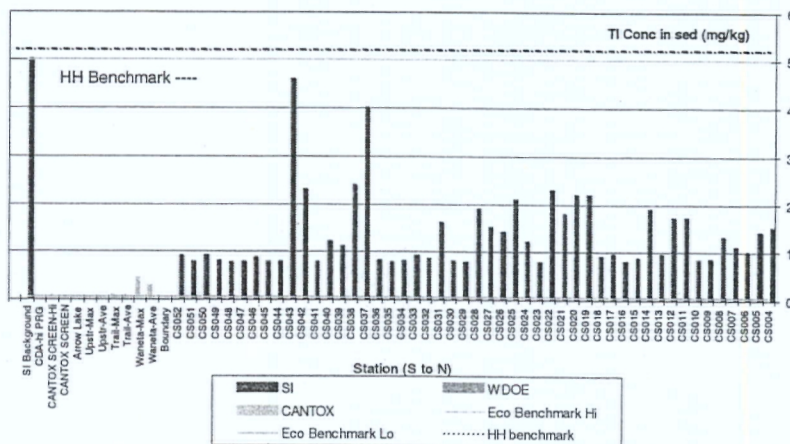
# Silver

Silver in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons



# Thallium

Thallium in sediment (SI-2002; WDOE 2001; CANTOX 95-99)  
Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons  
No slag analysis

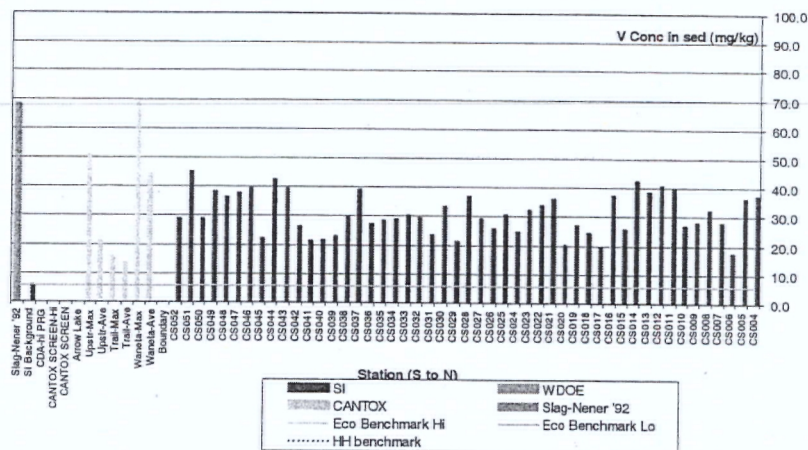


# Vanadium (no pattern )

Highest comparison value = 50.6 mg/kg

Vanadium in sediment (SI-2002; WDOE 2001; CANTOX 95-99)

Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons



# Zinc

Highest eco comparison value = 320 mg/kg (upstream peaks)

Zinc in sediment (SI-2002; WDOE 2001; CANTOX 95-99)

Horizontal bars: dotted = HH comparison; solid = highest & lowest Eco comparisons

